

REMARKS

Claims 1-18, 20-41, 52-53m 54-62 and 64-76 are presently pending. Claims 1, 2, 25, 26, 51, 54, 57, and 58 have been amended.

I. Claim Rejections - 35 U.S.C. § 102 and 103(a)

The present claims are based on the discovery of a multi-layer barrier in which substantially does not release a pesticide; nevertheless prevents pests from accessing wooden structures. The claimed multi-layer barrier is effective in preventing wood pests from accessing wooden structures with minimal effect on the environment. Moreover, by allowing the pesticide to release at this extremely low rate, the claimed multi-layer barrier remains effective in preventing wood pests from breaching the barrier for a prolonged period of time measured in years.

None of the references applied by the Examiner disclose, describe, or suggest the claimed multi-layer barrier either alone or in combination.

Applicants respectfully submit that present claims 1, 3-7, 15-16, 57, 59-62, 68, and 74-76 are patentable over Martinet (AU 13886/95). Martinet discloses "a series of sheets . . . of a film of plastic material impregnated with an insecticide product." Martinet, p. 6, ll. 15-19. The sheets "overlap one another" and "cover all the building surface." Id. at p. 6, ll. 19-22. The film produces a "double barrier" having "a repellent effect (protection of openings) and a contact and shock effect (destruction)." Id. at p. 8, ll. 18-23. The Martinet film provides "gradual release of small doses to create" the "repellent effect" and the "contact and 'shock' effect." Id. at p. 7, ll. 31-36. Because "openings necessarily have to be made in the film formed by the sheets," the openings are filled with "granules . . . of insecticidal plastic material" having a "chemical composition . . . similar to that of the film which forms the sheets." Id. at p. 9, l. 23 - p. 10, l. 8.

Pending independent claims 1 and 57 are distinguishable from Martinet in numerous respects. Independent claim 1 requires at least one pesticide-releasing layer having a polymeric matrix containing at least one pesticide which is bound within the polymeric matrix. Martinet differs from claim 1 in that there is no disclosure in Martinet of a layer which has polymer which is formed into a polymeric matrix or of binding a pesticide within a polymeric matrix in a manner so as to control pesticide release. Claim 1 also requires at least one pesticide-retaining layer which releases only minute amounts of the pesticide so that substantially no pesticide is released from the barrier. Martinet discloses "gradual release of small doses" of pesticide; nowhere does Martinet disclose the concept that substantially no pesticide is released from a multi-layer barrier as required in present claim 1. Claim 1 further requires a multi-layer barrier comprising at least one pesticide-retaining

layer positioned parallel to a pesticide-releasing layer. Martinet fails to disclose a multi-layer barrier let alone a barrier having a pesticide-retaining layer positioned parallel to a pesticide-releasing layer.

Independent claim 57 requires at least one pesticide-releasing layer having a polymeric matrix which comprises a pesticide and a carrier. As detailed above, there is no disclosure in Martinet of a layer having a polymer formed into a polymeric matrix. In addition, Martinet does not disclose a polymeric matrix comprising a pesticide and a carrier. The matrix and the carrier in claim 57 control pesticide release from the matrix. Nowhere does Martinet disclose a carrier let alone the concept of a polymeric matrix and a carrier acting to control pesticide release from the matrix. Claim 57 further requires a multi-layer barrier comprising at least one pesticide-retaining layer positioned parallel to a pesticide-releasing layer. Martinet does not disclose a multi-layer barrier let alone a multi-layer barrier which includes two pesticide-retaining layers positioned on opposite sides of a pesticide-releasing layer. Claim 57 also requires two pesticide-retaining layers which release only minute amounts of pesticide so that substantially no pesticide is released from the barrier. Martinet discloses "gradual release of small doses" pesticide; nowhere does Martinet disclose the concept that substantially no pesticide is released from a multi-layer barrier.

Accordingly, withdrawal of the rejection based on Martinet is respectfully requested.

Applicants respectfully submit that present claims 1, 3-7, 11-16, 57, 59-62, 70-72, and 74-75 are patentable over Morrow (WO 97/47190). Morrow discloses a pesticide-containing layer made of a foraminous material which is sandwiched between two sheets:

According to an aspect of the invention there is provided a laminar pesticidal barrier for covering the ground beneath a building or cultivated area comprising, an upper portion and a lower portion each of which comprises a layer substantially impermeable to pesticide, and a pesticide-containing layer between said portions, characterized in that the pesticide-containing layer is foraminous.

Morrow, p. 3, ll. 13-17. The upper and lower portions may be made of a polymer. *Id.* at p. 5, ll. 17-20. Morrow is designed to preserve or control release of the pesticide by sandwiching the pesticide-containing layer between two substantially pesticide-impermeable layers. Unlike the claimed invention, Morrow uses the foraminous layer as a mechanism to entrap the pests when the pests are successful in breaching the barrier:

In the unlikely event that pests breach the power portion of the barrier, the foraminous nature of the pesticide-containing layer will prevent progress of other pests across the barrier. During tests we have discovered that pests, particularly termites, become entangled in foraminous material. Entanglement both drastically hinders termites' progress and as they struggle to untangle themselves they are exposed to fatal quantities of insecticide.

Id. at p. 3, l. 32 – p. 4, l. 3. Also unlike the claimed invention, the barrier in Morrow would not substantially prevent pesticide release from the barrier because breaches of the outer layers in Morrow permit release of pesticide.

Pending claim 1 is distinguishable from Morrow in several respects. Morrow does not disclose a layer having polymer formed into a polymeric matrix as required by claim 1. Likewise, Morrow does not disclose binding a pesticide within a polymeric matrix so as to control the release of pesticide as required by claim 1. Unlike the invention of claim 1, any breach of the outer layers in Morrow will permit the pesticide to be released since the pesticide is not bound to the foraminous layer. Moreover, Morrow does not disclose a pesticide-retaining layer which releases only minute amounts of the pesticide therethrough such that substantially no pesticide is released from the barrier as required by claim 1. Due to the presence of the foraminous layer in Morrow, the Morrow barrier is unable to provide substantially no release of pesticide from the barrier.

Pending claim 57 is also distinguishable from Morrow in numerous respects. Morrow does not disclose a layer having polymer formed into a polymeric matrix as required by claim 57. In addition, Morrow does not disclose a polymeric matrix and a carrier acting to control pesticide release from the polymeric matrix as required in claim 57. Moreover, Morrow does not disclose two pesticide-retaining layers which release only minute amounts of the pesticide therethrough such that substantially no pesticide is released from the barrier as required by claim 57. As discussed above, the Morrow barrier is unable to provide substantially no release of pesticide from the barrier.

Accordingly, the rejection based on Morrow should be withdrawn.

Applicants respectfully submit that present claims 1-18, 20-37, 39-41, 43-52, 54-62, and 64-76 are patentable over Von Kohorn (U.S. Patent No. 4,639,393). Von Kohorn discloses a dispenser containing both pest control and pest attractant agents. Von Kohorn, col. 5, ll. 13-22. The Von Kohorn dispenser includes a solid, non-porous, polymeric wall element (see layers 11, 31, and 51 in FIGs. 1, 3, and 5 respectively). Id. at col. 5, ll. 16-23; col. 6, ll. 9-14, 52-56. The solid, non-porous polymeric material allows the pest control and attractant agents to migrate in the interior layers of the dispenser. Id. at col. 6, ll. 9-14, 52-56. The pest control and pest attractant agents are in the same layer (see layer 13 in FIG. 1) or are in separate layers (see, inter alia, layers 33 and 34 in FIG. 3). Id. at col. 5, ll. 23-26; col. 6, ll. 15-19. At least one pest control agent from the pest control agent layer(s) accumulates on the surface of the wall element while at least one pest attractant agent migrates to the surface of the wall element and volatilizes from the surface into the area surrounding

the dispenser so that pests move toward and contact the pest control agent on the dispenser surface. *Id.* at col. 5, ll. 29-43.

Pending claim 1 is distinguishable from Von Kohorn in numerous respects. Von Kohorn does not disclose a layer having polymer formed into a polymeric matrix as required by claim 1. Von Kohorn also differs from claim 1 in that there is no disclosure in Von Kohorn of binding pesticide within a polymeric matrix in a manner so as to control pesticide release. Moreover, Von Kohorn is based on a fundamentally different concept than that of the claimed invention. The Von Kohorn dispenser operates by having at least one pest control agent accumulate on the wall surface while at least one pest attractant agent migrates to the wall surface and volatilizes therefrom so that pests are attracted to and contact the pest control agent on the wall surface. Unlike in the Von Kohorn dispenser where pesticide accumulates on the wall surface, substantially no pesticide is released from the presently claimed barrier. Thus, Von Kohorn fails to disclose at least one pesticide-retaining layer positioned parallel to a pesticide-releasing layer which releases only minute amounts of the pesticide so that substantially no pesticide is released from the barrier.

Pending claim 57 is likewise distinguishable from Von Kohorn in several respects. Von Kohorn does not disclose a layer having polymer formed into a polymeric matrix as required by claim 57. The polymeric matrix and the carrier in claim 57 control pesticide release from the matrix. Nowhere does Von Kohorn disclose a polymeric matrix let alone the concept of a polymeric matrix and a carrier acting to control pesticide release from the matrix. Moreover, as detailed above, Von Kohorn is based on a fundamentally different concept than that of the claimed invention in that Von Kohorn operates by having pest control agent accumulate on the wall surface. Von Kohorn fails to disclose two pesticide-retaining layers positioned on opposite sides of a pesticide-releasing layer which release only minute amounts of pesticide such that substantially no pesticide is released from the barrier. Unlike in the Von Kohorn dispenser where pesticide accumulates on the wall surface, substantially no pesticide is released from the presently claimed barrier.

Pending independent claim 20 is also distinguishable from Von Kohorn. Claim 20 is directed to a multi-layer barrier film comprising eight layers. There is no disclosure in Von Kohorn of an eight-layered film let alone all of the individual layers recited in claim 20. For example, as discussed above, Von Kohorn does not disclose a layer having polymer formed into a polymeric matrix. Hence, nowhere does Von Kohorn disclose a sixth layer which comprises a polymeric matrix containing carbon black and one or more pesticides as required in claim 20. In addition, Von Kohorn does not disclose the use of carbon black. Moreover, as detailed above, pesticide accumulates on the wall surface of the Von Kohorn dispenser; nowhere does Von Kohorn disclose substantial nonrelease of pesticide from the barrier film as required in claim 20. Thus, nowhere in Von Kohorn is there

disclosed "an eighth layer made of the protective resin wherein the rate of release of the pesticide from the sixth layer into the other layers is higher than the rate of release of the pesticide from the barrier film and wherein there is substantially no release of the pesticide from the barrier film itself" as required in claim 20.

Pending independent claim 50 is also distinguishable from Von Kohorn. Like claim 20, claim 50 is directed to a multi-layer barrier film comprising eight layers. Von Kohorn does not disclose an eight-layered film let alone all of the individual layers recited in claim 50. Nowhere does Von Kohorn disclose a sixth layer which comprises a polymeric matrix containing carbon black and one or more pesticides as in claim 50. In addition, Von Kohorn does not disclose the use of carbon black. Also, Von Kohorn does not disclose "an eighth layer made of the protective resin . . . wherein the rate of release of the pesticide from the sixth layer into the other layers is higher than the rate of release of the pesticide from the barrier film and wherein there is substantially no release of the pesticide from the barrier film itself" as required by claim 50. Von Kohorn also fails to disclose a protective resin used in the first, third, and eighth layers of a multi-layer barrier film which comprises a blend of polyolefin plastomer, color concentrate, and polyethylene. Von Kohorn further fails to disclose using a high density polyethylene in the fourth layer of a multi-layer barrier film or using low density polyethylene in the fourth layer of a multi-layer barrier film.

For the foregoing reasons, withdrawal of the rejections based on Von Kohorn is respectfully requested.

Applicants submit that the addition of either Zimmerman (U.S. Patent No. 5,139,566) or Iwakawa (U.S. Patent No. 5,902,597) to Von Kohorn as a basis for rejecting claims 1-18, 20-37, 39-41, 43-52, 54-62, and 64-76 fails to yield the claimed invention.

Zimmerman is directed to a concept different from that presently claimed. Zimmerman discloses a geotextile that is "applied to the soil to form a layer on or beneath the soil." Zimmerman, col. 3, ll. 44-45. The geotextile is a "porous web" having a "plurality of spaced nodules" of a "slow release, soil treatment system bonded thereto." *Id.* at col. 2, l. 67 – col. 3, l. 5. The nodules comprise the "soil treatment agent which is dispersed in a water insoluble solid binder or matrix." *Id.* at col. 3, ll. 27-31. In contrast, the claimed invention is directed to a multi-layer barrier whereby substantially no pesticide is released from the barrier. Nowhere in Zimmerman is there disclosed at least one pesticide-retaining layer positioned parallel to a pesticide-releasing layer which releases only minute amounts of the pesticide so that substantially no pesticide is released from the barrier as required by claim 1 or two pesticide-retaining layers positioned on opposite sides of a pesticide-releasing layer which releases only minute amounts of the pesticide so that substantially no pesticide is released

from the barrier as required by claim 57. Likewise, Zimmerman does not disclose an eight-layered barrier film having "an eighth layer made of the protective resin" "wherein the rate of release of the pesticide from the sixth layer into the other layers is higher than the rate of release of the pesticide from the barrier film and wherein there is substantially no release of the pesticide from the barrier film itself" as required by claims 20 and 50.

Iwakawa likewise is directed to a concept different from that presently claimed. Iwakawa discloses an "under floor insect control method . . . in which an insect control chemical in a mixed resin foam coating can be installed by forcefully mixing . . . and spraying . . . an aqueous emulsion, . . . an inert organic solvent solution . . . and an insect control chemical." Iwakawa, col. 2, ll. 34-49. As with Zimmerman, Iwakawa does not disclose at least one pesticide-retaining layer positioned parallel to a pesticide-releasing layer which releases only minute amounts of the pesticide so that substantially no pesticide is released from the barrier as in claim 1 or two pesticide-retaining layers positioned on opposite sides of a pesticide-releasing layer which releases only minute amounts of the pesticide so that substantially no pesticide is released from the barrier as in claim 57. Iwakawa also does not disclose an eight-layered barrier film having "an eighth layer made of the protective resin" "wherein the rate of release of the pesticide from the sixth layer into the other layers is higher than the rate of release of the pesticide from the barrier film and wherein there is substantially no release of the pesticide from the barrier film itself" as in claims 20 and 50.

Applicants submit that the addition of Saitoh (U.S. Patent No. 4,747,902) and Kodama (WO 95/22902) to Von Kohorn as a basis for rejecting claims 1-18, 20-37, 39-41, 43-52, 54-62, and 64-76 fails to yield the claimed invention. The approach in Saitoh differs from that of the claimed invention. Saitoh is directed to

a method for producing laminated material which is characterized in that the lamination process can be carried out quite easily, the adhesive strength between laminated layers is high and, in the lamination process, the thermal deterioration of polyolefin or its composition or the undesirable release or deterioration of active agents in the polyolefin composition are well avoided.

Saitoh, col. 1, ll. 9-16. Saitoh discloses a "substrate sheet" "which is previously applied with the lamination of polyolefin." *Id.* at col. 2, ll. 52-54. In one method, "a polyolefin film or active agent-containing polyolefin film to be laminated is used by being heated to a molten web." *Id.* at col. 2, ll. 54-57. In the other method disclosed in Saitoh, "the step of preparation of the film to be laminated and the step of lamination are combined into one step." *Id.* at col. 2, ll. 57-60. Saitoh does not disclose a barrier having at least one pesticide-retaining layer positioned parallel to a pesticide-releasing layer which releases only minute amounts of the pesticide so that substantially no pesticide is released from the barrier as in claim 1 or two pesticide-retaining layers positioned on opposite

sides of a pesticide-releasing layer which releases ^{only} minute amounts of the pesticide so that substantially no pesticide is released from the barrier as in claim 57. Moreover, Saitoh does not disclose an eight-layered barrier film having "an eighth layer made of the protective resin" "wherein the rate of release of the pesticide from the sixth layer into the other layers is higher than the rate of release of the pesticide from the barrier film and wherein there is substantially no release of the pesticide from the barrier film itself" as in claims 20 and 50.

The approach in Kodama also differs from that of the claimed invention. Kodama is directed to a termite control composition containing a pyrazole derivative and a pyrethroid compound as effective ingredients. Kodama, p. 1, ll. 3-5. Kodama fails to disclose a barrier having at least one pesticide-retaining layer positioned parallel to a pesticide-releasing layer which releases only minute amounts of the pesticide so that substantially no pesticide is released from the barrier as required by claim 1 or two pesticide-retaining layers positioned on opposite sides of a pesticide-releasing layer which releases only minute amounts of the pesticide so that substantially no pesticide is released from the barrier as required by claim 57. Moreover, Kodama fails to disclose an eight-layered barrier film having "an eighth layer made of the protective resin" "wherein the rate of release of the pesticide from the sixth layer into the other layers is higher than the rate of release of the pesticide from the barrier film and wherein there is substantially no release of the pesticide from the barrier film itself" as required by claims 20 and 50.

For the foregoing reasons, withdrawal of the rejection based on Von Kohorn in view of Zimmerman or Iwakawa, Saitoh, and Kodama is respectfully requested.

II. Claim Rejections - 35 U.S.C. § 112

The Examiner has requested that Applicants substitute the generic identification of the "Saranex®" in claims 2, 54, and 58 and the term "Saranex® 14" in claims 25, 26, and 51. Applicants have amended claims 2, 25, 26, 51, 54, and 58 to provide further details regarding "Saranex®" and "Saranex® 14." Support for the generic identification of the term "Saranex" which has been incorporated into the claims is found in Appendices A-Q.

Applicants respectfully traverse the rejection of claims 1-18 and 57 and 64-67 as indefinite as lacking support for the release rate from the barrier in "minute amounts." The specification at p. 15, ll. 13-16 indicates that the phrase "releasing only minute amounts" is "intended to define a release rate less than 0.4 $\mu\text{g}/\text{cm}^2/\text{day}$, preferably less than 0.1 $\mu\text{g}/\text{cm}^2/\text{day}$, and most preferably less than 0.05 $\mu\text{g}/\text{cm}^2/\text{day}$ and that this term "encompasses a release rate of below detectable limits." In view of this recitation in the specification, Applicants respectfully submit that the term "minute amounts" fulfills the definiteness requirement under 35 U.S.C. § 112, second paragraph.

Applicants also respectfully traverse the rejection of claims 20-22 under 35 U.S.C. § 112, second paragraph for reciting "protective resin." The specification provides information regarding the protective resin layers:

Referring now to FIG. 21, a barrier film 110 includes outside layers 112 and 114. The outside layers 112, 114 are made of blends of an extrusion-coating grade polyolefin plastomer (sold under the brand name and model number of Affinity® PT1450 by The Dow Chemical Company), a color concentrate (a blend produced by Colortech Inc. of Brampton, Ontario, Canada of the carbon black Vulcan® 9 manufactured by the Cabot Corporation and LDPE), and extrusion-coating grade polyethylene (Novapol® LC-0522-A available from Nova Chemicals Canada Ltd.). The materials used to make the outside layers 112, 114 are also referred to below as the "New Generation Resin" or "NGR". The materials used to make the outside layers 112, 114 assist in providing ultraviolet protection and heat sealability to the barrier. The melting point of the outside layers 112, 114 is approximately 110°C. The life expectancy of the outside layers 112, 114 is expected to be comparable to moisture barriers currently being used during construction, and the material is expected to last indefinitely when applied underground. The outside layers 112, 114 have a thickness of approximately 0.0011 inch (1.1 mil) and have approximately 26 grams of material per square meter in the preferred embodiment.

Specification, p. 27, l. 32 – p. 28, l. 14

Referring now to FIG. 24, a barrier film 210 includes outside layers 212, 214. The barrier film 210 serves to prevent the entrance of wood deteriorating organisms into a structure while resulting in a negligible concentration of lambda cyhalothrin in the soil and other surroundings. In one embodiment, the outside layers 212, 214 are made of blends of an extrusion-coating grade polyolefin plastomer, a color concentrate, and extrusion-coating grade polyethylene as described above with respect to the eight-layer film and referred to as the "New Generation Resin" or "NGR". The outside layers 212, 214 may have a thickness ranging from approximately 0.0005 inch (0.5 mil) to about 0.003 inch (3 mil) and may have from approximately 13 grams to 78 grams of material per square meter.

Id. at p. 30, ll. 16-25. Likewise, example 29 provides additional information regarding the protective resin layers:

This example describes a method for making an eight-layered sheet. The composition of each of the layers of the sheet is as follows.

Layer Description

1 New Generation Resin (NGR) (available from Fabrene, Inc.) layer composed of black resin (Colortech No. 20413-19 available from Colortech Inc.), extrusion coating grade polyolefin plastomer (Affinity® PT1450 available from The Dow Chemical Company), and low density polyethylene (Novapol® LC-0522-A available from Nova Chemicals Canada Ltd.) having a thickness of about 0.001 inch (1 mil)

Id. at p. 45, ll. 12-19.

The specification makes it clear that the protective resins assist in providing, *inter alia*, ultraviolet protection and heat sealability to the barrier, in preventing the entrance of wood deteriorating organisms into a structure, and in permitting a negligible concentration of lambda cyhalothrin in the soil and other surroundings. Id. at p. 27, l. 32 - p. 28, l. 14; p. 30, ll. 16-25; p. 45, ll. 12-19. The specification also provides illustrative examples of materials which may comprise the protective resin layer. Id. In view of the foregoing, Applicants respectfully submit that the term "protective resin" fulfills the definiteness requirement under 35 U.S.C. § 112, second paragraph.

Applicants have amended claims 1 and 57 to recite that substantially no pesticide is released from the barrier. In view of these amendments, Applicants submit that any lack of clarity regarding polymer versus barrier release has been obviated.

In view of the above amendments, comments, and attached documents, it is believed that the rejections under 35 U.S.C. § 112, second paragraph have been obviated. Withdrawal of the rejection of the claims under 35 U.S.C. § 112, second paragraph is respectfully requested.

III. Enclosures

Applicants have listed references C6, C15, C29, and C31 from Applicants' First Information Disclosure Statement on the enclosed PTO-1449 form along with the dates for these references so that the Examiner may make these references of record. A translation of reference E3 from Applicants' Second Information Disclosure Statement is being obtained and will be forwarded to the Examiner as soon as it is received. Applicants have also listed reference E3 on the enclosed PTO-1449 form so that the Examiner may make this reference of record.

IV. Conclusion

If there are any matters which may be resolved or clarified through a telephone interview, the Examiner is requested to contact the undersigned attorney at the number indicated. Should any additional fees be required (except for payment of the issue fee), the Commissioner is authorized to deduct the fees from Jenkens & Gilchrist, P.C. Deposit Account No. 10-0447, Order No. 47309-00031USP1.

Respectfully submitted,


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